

of a hoistway. In this case, the control device which controls an elevator is also installed in a hoistway.

[0003]The control device is provided with the main circuit part which supplies electric power to a drive and drives the drive, and the controlling circuit part which rides at the time of the work of adjustment, maintenance, etc. of an elevator, and controls operation of a basket.

[0004]And in JP,7-37308,B, the main circuit part and controlling circuit part of a control device are constituted separately. Install a main circuit part in the middle of a hoistway, and a controlling circuit part is provided in the pit of a hoistway. For example, when a trouble occurs in a controlling circuit part, it is indicated that it is made to do inspection work, authorized personnel entering in the pit of a hoistway, taking out a controlling circuit part, making it move to near the main circuit part, and taking the check of operation with a controlling circuit part and a main circuit part.

[0005]Therefore, in the elevator of this JP,7-37308,B, it is possible to do the work of adjustment, maintenance, etc., taking out a controlling circuit part from the inside of a pit, and performing operation to that controlling circuit part at the time of the work of adjustment, maintenance, etc. of an elevator.

[0006]

[Problem(s) to be Solved by the Invention]However, if authorized personnel enter in a pit one by one and take out a controlling circuit part, work is troublesome, it is not only troublesome, but when authorized personnel enter in a pit, various danger follows and there is a problem in respect of safety.

[0007]When a controlling circuit part is taken out from the inside of a pit, the space for arranging the controlling circuit part will have to be beforehand secured in a hoistway, and it will lead to extension-ization of a hoistway.

[0008]The place which this invention was made paying attention to such a point, and is made into that purpose, It is in providing the elevator in which

adjustment, maintenance, etc. of an elevator can be worked easily often and safely, and the DETTO space in a hoistway can be effectively utilized for, and the controlling circuit part of a control device can be installed.

[0009]

[Means for Solving the Problem]The invention according to claim 1 possesses a riding basket which goes up and down inside of a hoistway, a drive which drives this riding basket, and a control device which controls operation of an elevator, and said control device, While having a main circuit part which supplies electric power to said drive and drives the drive, and a controlling circuit part which controls operation of a riding basket and constituting independently said main circuit part and a controlling circuit part, The main circuit part is installed near said drive in a hoistway, and a controlling circuit part is characterized by being provided in a state which can be operated from an elevator car stop of the exterior of a hoistway.

[0010]And in the invention according to claim 2, a controlling circuit part of a control device is characterized by being stored in a panel of a door provided in an entrance of an elevator car stop.

[0011]In the invention according to claim 3, a controlling circuit part of a control device is characterized by being provided in the side of a sill for door support established in an entrance of an elevator car stop.

[0012]In the invention according to claim 4, a controlling circuit part of a control device is characterized by providing caudad a sill for door support provided in an entrance of an elevator car stop.

[0013]In the invention according to claim 5, a controlling circuit part of a control device is characterized by providing the upper part of a door established in an entrance of an elevator car stop on a wrap header case.

[0014]In the invention according to claim 6, a controlling circuit part of a control device is characterized by

being provided on a riding basket in a hoistway.

[0015]In the invention according to claim 7, a controlling circuit part of a control device is characterized by being provided in a ceiling part of a hoistway.

[0016]In the invention according to claim 8, it is characterized by using a shielded cable for a signal transmission between a main circuit part of a control device, and a controlling circuit part.

[0017]In the invention according to claim 9, it is characterized by using an optical cable for a signal transmission between a main circuit part of a control device, and a controlling circuit part.

[0018]

[Embodiment of the Invention]

Hereafter, this embodiment of the invention is described with reference to drawings. A 1st embodiment of this invention is shown in drawing 1. The numerals 1 shown in a figure are the hoistways formed in the building, it rides in this hoistway 1 and the basket 2 and the balance weight 3 are formed.

[0019]The motor pulley 5 which drives on the thin motor 4 and this motor 4 as a drive, and rotates is formed in the upper part in the hoistway 1. The riding basket 2 and the balance weight 3 of each other are connected with a main rope (not shown). The middle of this main rope is imposed about on said motor pulley 5, and ride with this main rope, and the basket 2 and the balance weight 3 maintain the state of balancing mostly in weight, and are hung in the hoistway 1. It rides according to rotation of the motor pulley 5, and the basket 2 and the balance weight 3 go up and down to an opposite direction mutually.

[0020]The guide rail 7 in which the guide rail 6 which guides rise and fall of the riding basket 2 guides rise and fall of the balance weight 3 to the both sides of the balance weight 3 again is formed in the both sides of the riding basket 2, respectively.

[0021]The entrance 8 which a passenger frequents is formed in the front face of the riding basket 2, and for example, it opens and closes this entrance 8, the door 9 of a double door

type rides and it is provided in the front face of the basket 2.

[0022]The entrance 11 which leads in the hoistway 1 is formed in the wall surface of the elevator car stop 10 of the floor of a building, and the door 12 by the side of a car stop is formed in this entrance 11.

[0023]This door 12 is constituted by the double door type, for example, is arranged, enabling a free slide on the sill 13 attached at a level with the inside lower part of the entrance 11, and opens and closes the entrance 11 by sliding to right and left along with that sill 13.

[0024]The upper part of the door 12 is covered with the header case 14 provided in the inner top of the entrance 11, and the door 12 moves it to right and left within this header case 14.

[0025]The control device of this elevator is provided with the main circuit part 15 which controls the motor 4 to be shown in drawing 2, and the controlling circuit part 16 which controls operation operation of the riding basket 2, and these main circuit parts 15 and the controlling circuit part 16 are constituted independently separately.

[0026]And the main circuit part 15 and the motor 4 of each other are connected via the cable 17,

Transmission of the signal between the main circuit part 15 and the motor 4 is performed via this cable 17, The controlling circuit part 16 and the main circuit part 15 are mutually connected via the cable 18, and transmission of the signal between the controlling circuit part 16 and the main circuit part 15 is performed via this cable 18.

[0027]And the main circuit part 15 of this control device is formed in the position which is near said motor 4 in the hoistway 1 as shown in drawing 1, and does not bar rise and fall of the riding basket 2, and keeps predetermined safe distance horizontal with the riding basket 2. And electric power is supplied to the motor 4 by this main circuit part 15, the motor pulley 5 rotates according to supply of this electric power, and the riding

basket 2 and the balance weight 3 go up and down.

[0028]The controlling circuit part 16 of the control device is formed in the state which can be operated from the elevator car stop 10. That is, in the case of this 1st embodiment, it is stored inside the inside of the panel of the door 12 by the side of a car stop. And the sliding mechanism or horizontal rolling mechanism as a moving mechanism can draw out now this controlling circuit part 16 from the inside of the door 12 to the method of the outside of that inside if needed.

[0029]At the time of the work of adjustment, maintenance, etc. of an elevator, first, authorized personnel open only required width on work, and lock the door 12 by the side of a car stop. A hand is turned inside the door 12 from the car stop 10 in this state, the controlling circuit part 16 is pulled out, required operation, for example, the opening operation of an electric power switch, etc., is performed to the controlling circuit part 16 of a car stop 10 smell lever, and the work of adjustment, maintenance, etc. of an elevator is done.

[0030]After the end of work, restoring operation, such as closing the electric power switch of the controlling circuit part 16, is performed, the after [this] controlling circuit part 16 is returned to the former position inside the inside of the door 12, the door 12 is shut, and normal operation is checked.

[0031]Thus, operation to the controlling circuit part 16 performed in the case of work, such as adjustment, maintenance, etc. of an elevator, can be performed easily often and safely at the car stop 10 of an elevator, without it seeming that authorized personnel enter in the hoistway 1 one by one.

[0032]And since it has stored to the dead space in the door 12 by the side of a car stop, the controlling circuit part 16 does not have the necessity that the space for exclusive use for installing the controlling circuit part 16 in the hoistway 1 is secured, therefore it attains space-saving-ization in the hoistway 1, and the reduction of it becomes possible.

[0033]Although transmission of the signal which the switching frequency of an inverter superimposes at the time of the drive is performed and it may work between the main circuit part 15 of a control device, and the motor 4 as a noise which this exerts on other apparatus, The main circuit part 15 is formed near the motor 4, and does not need to take about the cable 17 which connects the main circuit part 15 and the motor 4 for this reason for a long time, therefore can make the length of that cable 17 the shortest, and can reduce the influence on the circumference by a noise.

[0034]A 2nd embodiment of this invention is shown in drawing 3, and the controlling circuit part 16 of the control device is formed in the space portion of the side by the side of the end of the sill 13 which supported the door 12 by the side of a car stop enabling a free slide in this embodiment. The sliding mechanism or horizontal rolling mechanism as a moving mechanism can draw [to / from the position of the side of the sill 13 / near the entrance 11 of the car stop 10] out now this controlling circuit part 16 if needed. And other component part has the same composition as said 1st embodiment.

[0035]In the case of this embodiment, in the case of work, such as adjustment, maintenance, etc. of an elevator. First, authorized personnel open only required width on work, and lock the door 12 by the side of a car stop, A hand is turned in the hoistway 1 from the car stop 10 in this state, the controlling circuit part 16 is pulled out into the portion of the entrance 11, and the work of adjustment, maintenance, etc. of an elevator is done, performing required operation to the controlling circuit part 16 of a car stop 10 small lever.

[0036]After the end of work, restoring operation, such as closing the electric power switch of the controlling circuit part 16, is performed, the after [this] controlling circuit part 16 is returned to the former position of the side of the sill 13, the door 12 is shut, and normal operation is checked.

[0037]Also in this case, operation to the controlling circuit part 16 can be performed easily often and safely at the car stop 10 of an elevator like said 1st embodiment, without it seeming that authorized personnel enter in the hoistway 1 one by one.

[0038]And since it is installed in the DETTO space of the side of the sill 13, the controlling circuit part 16 does not have the necessity that the space for exclusive use for installation is secured in the hoistway 1, therefore it attains space-saving-ization in the hoistway 1, and the reduction of it becomes possible.

[0039]A 3rd embodiment of this invention is shown in drawing 4, and the controlling circuit part 16 of the control device is formed in the space portion of the sill 13 bottom which supported the door 12 by the side of a car stop enabling a free slide in this embodiment. The sliding mechanism or horizontal rolling mechanism as a moving mechanism can draw out now this controlling circuit part 16 into the portion of the entrance 11 from the sill 13 bottom if needed. And other component part has the same composition as said 1st embodiment.

[0040]In the case of this embodiment, in the case of work, such as adjustment, maintenance, etc. of an elevator. First, authorized personnel open only required width on work, and lock the door 12 by the side of a car stop. A hand is turned in the hoistway 1 from the car stop 10 in this state, the controlling circuit part 16 of the sill 13 bottom is pulled out into the portion of the entrance 11, and the work of adjustment, maintenance, etc. of an elevator is done, performing required operation to the controlling circuit part 16 of a car stop 10 smell lever.

[0041]After the end of work, restoring operation, such as closing the electric power switch of the controlling circuit part 16, is performed, the after [this] controlling circuit part 16 is returned to the former position of the sill 13 bottom, the door 12 is shut, and normal operation is checked.

[0042]Also in this case, operation to the controlling circuit part 16 can be

performed easily often and safely at the car stop 10 of an elevator like said 1st embodiment, without it seeming that authorized personnel enter in the hoistway 1 one by one.

[0043]And since it is installed in the DETTO space of the sill 13 bottom, the controlling circuit part 16 does not have the necessity that the space for exclusive use for installation is secured in the hoistway 1, therefore it attains space-saving-ization in the hoistway 1, and the reduction of it becomes possible.

[0044]A 4th embodiment of this invention is shown in drawing 5, and the controlling circuit part 16 of the control device is formed in this embodiment on the header case 14 provided in the upper part of the door 12 by the side of a car stop. The sliding mechanism or horizontal rolling mechanism as a moving mechanism can draw out now this controlling circuit part 16 into the portion of the entrance 11 from on the header case 14 if needed. And other component part has the same composition as said 1st embodiment.

[0045]In the case of this embodiment, in the case of work, such as adjustment, maintenance, etc. of an elevator. First, authorized personnel open only required width on work, and lock the door 12 by the side of a car stop. A hand is turned in the hoistway 1 from the car stop 10 in this state, the controlling circuit part 16 on the header case 14 is pulled out into the portion of the entrance 11, and the work of adjustment, maintenance, etc. of an elevator is done, performing required operation to the controlling circuit part 16 of a car stop 10 small lever.

[0046]After the end of work, restoring operation, such as closing the electric power switch of the controlling circuit part 16, is performed, the after [this] controlling circuit part 16 is returned to the former position of the header case 14 upper part, the door 12 is shut, and normal operation is checked.

[0047]Also in this case, operation to the controlling circuit part 16 can be performed easily often and safely at

the car stop 10 of an elevator like said 1st embodiment, without it seeming that authorized personnel enter in the hoistway 1 one by one.

[0048] And since it is installed in the DETTO space of the header Sease 14 upper part, the controlling circuit part 16 does not have the necessity that the space for exclusive use for installation is secured in the hoistway 1, therefore it attains space-saving-ization in the hoistway 1, and the reduction of it becomes possible.

[0049] A 5th embodiment of this invention is shown in drawing 6, and in this embodiment, the controlling circuit part 16 of a control device rides, and it is provided in the upper surface of the basket 2. This controlling circuit part 16 can ride if needed with the sliding mechanism as a moving mechanism, and can be pulled out now from the center section of the upper surface of the basket 2 to those front sides. And other component part has the same composition as said 1st embodiment.

[0050] In the case of work, such as adjustment, maintenance, etc. of an elevator, in the case of this embodiment, authorized personnel open only required width, and lock the door 12 by the side of a car stop on work, first, in it, and the position from which that upper surface serves as the same level as the car stop 10 is made to suspend the riding basket 2.

[0051] In this state, it edits in the hoistway 1, and rides from the car stop 10, and the controlling circuit part 16 of the upper surface of the basket 2 is drawn near near the entrance 11, and the work of adjustment, maintenance, etc. of an elevator is done, performing required operation to the controlling circuit part 16 of a car stop 10 smell lever.

[0052] After the end of work, restoring operation, such as closing the electric power switch of the controlling circuit part 16, is performed, it rides, the after [this] controlling circuit part 16 is returned to the former position of the upper surface of the basket 2, the door 12 is shut, and normal operation is checked.

[0053]Also in this case, operation to the controlling circuit part 16 can be performed easily often and safely at the car stop 10 of an elevator like said 1st embodiment, without it seeming that authorized personnel enter in the hoistway 1 one by one.

[0054]And since it is installed in the DETTO space on the riding basket 2, the controlling circuit part 16 does not have the necessity that the space for exclusive use for installation is secured in the hoistway 1, therefore it attains space-saving-ization in the hoistway 1, and the reduction of it becomes possible.

[0055]A 6th embodiment of this invention is shown in drawing 7, and the controlling circuit part 16 of the control device is formed in the ceiling part of the hoistway 1 in this embodiment. This controlling circuit part 16 can be formed in the position biased to the car stop 10 side in the ceiling part of the hoistway 1, and can be reduced now into the portion of the entrance 11 of that car stop 10 if needed by for example, the suspending machine style and rolling mechanism as a moving mechanism. And other component part has the same composition as said 1st embodiment.

[0056]In the case of this embodiment, in the case of work, such as adjustment, maintenance, etc. of an elevator. First, authorized personnel open only required width on work, and lock the door 12 by the side of a car stop, The controlling circuit part 16 which extends a hand in the hoistway 1 from the car stop 10 in this state, and is arranged to the ceiling part of the hoistway 1 is reduced near the entrance 11, and the work of adjustment, maintenance, etc. of an elevator is done, performing required operation to this controlling circuit part 16.

[0057]After the end of work, restoring operation, such as closing the electric power switch of the controlling circuit part 16, is performed, the after [this] controlling circuit part 16 is returned to the former position of the ceiling part of the hoistway 1, the door 12 is shut, and normal operation is checked.

[0058]Also in this case, operation to the controlling circuit part 16 can be performed easily often and safely at the car stop 10 of an elevator like said 1st embodiment, without it seeming that authorized personnel enter in the hoistway 1 one by one.

[0059]And since it is installed in the space of the ceiling part of the hoistway 1, the controlling circuit part 16 does not have the necessity that the space for exclusive use for installation is secured in the hoistway 1, therefore it attains space-saving-ization in the hoistway 1, and the reduction of it becomes possible.

[0060]On the other hand, it is possible to use a shielded cable in said each embodiment as the cable 18 for signal transmissions which connects between the main circuit part 15 and the controlling circuit parts 16. And by using a shielded cable, superposition of the noise at the time of a signal transmission can be suppressed.

[0061]It is also possible to use the cable 18 for the signal transmissions as an optical cable. And by using an optical cable, mixing of the noise at the time of a signal transmission can be prevented.

[0062]

[Effect of the Invention]As explained above, according to this invention, the operation to the controlling circuit part performed in the case of work, such as adjustment, maintenance, etc. of an elevator, Without applying the troublesome and troublesome time and effort that authorized personnel enter in a pit one by one, Since it can carry out easily often and safely at an elevator car stop, and the DETTO space in a hoistway is utilized effectively and the controlling circuit part of the control device is installed in the hoistway, space-saving-ization in the hoistway 1 is attained, and the reduction becomes possible.

[Translation done.]